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REMARKS

In view of the following discussion, the Applicants submit that none of the claims now pending in the application is anticipated under the provisions of 35 U.S.C. § 102 or made obvious under the provisions of 35 U.S.C. § 103. Thus, the Applicants believe that all of these claims are now in allowable form.

I. OBJECTIONS TO THE DISCLOSURE

The Examiner objects to the discussion of Fig. 1 in the Specification. Specifically, the Examiner submits that the discussion of Fig. 1 in the Detailed Description should be part of the Background of the Invention. In response, the Applicants have inserted the discussion of Fig. 1 into the Background of the Invention, and deleted the discussion from the Detailed Description. Thus, the Applicants respectfully request that this objection be withdrawn.

Moreover, the Examiner objects to the disclosure because line numbering is not provided for the Claims and the Abstract and requests that line numbers be provided in these portions of the disclosure. The Applicants respectfully submit that line numbering is not required by the MPEP, and that lack of line numbering is therefore not a proper basis for an objection to the disclosure. Thus, the Applicants respectfully request that this objection be withdrawn.

In addition, the Applicants have voluntarily amended the Specification in order to correct minor typographical errors and to provide more complete disclosure. Specifically, the paragraph beginning on page 11, line 14 and ending on page 12, line 4 has been amended in accordance with MPEP §608.01 to remove embedded hyperlinks from the URLs referenced on page 12, line 3. In addition, the paragraph beginning on page 9, line 18 and ending on page 9, line 26 has been amended to include the serial number and filing date for the referenced U.S. Patent Application. The Applicants submit that no new matter was entered into the Specification as a result of these amendments.

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II. CLAIM OBJECTIONS

The Examiner objects to claims 2-5, 7, 9-14 and 16-17 because of several informalities. In response, the Applicants have amended claims 2-5, 7, 9-14 and 16-17 as suggested by the Examiner.

Specifically, the Applicants have amended claims 1-4, 7, 9-11, 13-14 and 16-17 to include a comma after the phrase "The system of claim 1". Claim 5 has been amended to include a comma after the phrase "The system of claim 4", and claim 12 has been amended to include a comma after the phrase "The system of claim 11".

In addition, the Applicants have voluntarily amended claims 9, 10 and 17 to correct minor grammatical errors. In particular, claim 9 has been amended to recite, "the plurality of interconnected nodes is communicatively coupled ...", replacing "the plurality of interconnected nodes are communicatively coupled ...". Claim 10 has been amended to recite, "the plurality of master nodes is part ...", replacing "the plurality of master nodes are part". Claim 17 has been amended to recite, "at least one of the master nodes is operable ...", replacing "at least one of the master nodes are operable".

The Applicants therefore submit that claims 2-5, 7, 9-14 and 16-17 are in proper form. Thus, the Applicants respectfully request that the objection to claims 2-5, 7, 9-14 and 16-17 be withdrawn.

III. REJECTION OF CLAIMS 1-13 AND 17 UNDER 35 U.S.C. § 102

Claims 1-13 and 17 stand rejected as being anticipated by the Pandya patent (United States Patent No. 6,671,724, Issued December 30, 2003, hereinafter "Pandya"). The Applicants respectfully traverse the rejection.

Pandya teaches a system for managing network resources in a distributed networking environment. The system includes two main software components: a plurality of "agent" components deployed at various network devices, and one or more "control point" components deployed throughout the network. The agents monitor network resources, as well as the network devices with which they are associated, for example to assess the character and quantity of network resources that are required by the network devices. The agents report this information to the control points, which

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centrally coordinate and control the deployed agents and monitor the status of network resources. In response to monitored network conditions and the data reported by the agents, the control points may alter the behavior of particular agents in order to provide the required network services and resources to the networked devices.

The Examiner's attention is directed to the fact that Pandya fails to disclose or suggest the novel invention of a virtual private network in which master nodes control membership for subsets of member nodes, as claimed in Applicants' Independent claim 1. Specifically, Applicants' claim 1 positively recites:

1. A group management system comprising:
a plurality of interconnected nodes communicatively coupled with each other as member nodes of a virtual private network ("VPN"); and
a plurality of master nodes, each of the master nodes controlling membership in the VPN for an associated non-empty subset of the member nodes. (Emphasis added)

The Applicants' invention is directed to methods and apparatuses for scalable distributed management of virtual private networks (VPNs). The management of encrypted group communications necessary to establish secure, private VPN communications channels through an underlying public network infrastructure places a variety of burdens on a VPN manager. In particular, the addition or removal of a member from a VPN often involves the generation and distribution of one or more new encryption keys that allow current VPN members to decrypt private communications sent through the VPN, but prevent non-VPN members from decrypting the communications. As VPN membership increases and changes dynamically with greater frequency, the complexity of encryption key management becomes even more burdensome. Thus, the VPN manager becomes a single point of failure for the entire VPN; overload of the VPN manager can cause the entire VPN to fail. This makes the VPN architecture very difficult and very costly to scale, which is not ideal for enterprises relying on secure and private electronic communications.

The Applicants' invention enhances the scalability of a VPN by dividing the member nodes of the VPN into subsets and providing a plurality of master nodes that

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are each associated with a subset of member nodes to control membership in the VPN for that subset. For example, each master node is responsible for managing the generation and distribution of encryption keys for only its associated subset(s), so that VPN communication and management burdens are not placed entirely on a single master node. This eliminates the single point of failure, because if one master node fails, any one of a plurality of other master nodes is available to assume the failed node's responsibilities. Moreover, a VPN employing such an architecture is more easily scalable than a VPN employing a more conventional architecture, because a plurality of new member nodes may be added to the VPN through a discrete master node. The security and privacy afforded by traditional VPNs is still retained.

In contrast, Pandya teaches a distributed network comprising a plurality of interconnected computing devices, not a VPN. Specifically, Pandya does not teach or suggest a network architecture that provides secure, private communications channels between select network devices.

Moreover, Pandya teaches a method for locally monitoring network devices in order to optimize network resource allocation among multiple devices, for example via local agents that report back to a central control point. Pandya does not address the need to control membership in the network in which the agents and the control points are deployed, for example through the management and distribution of encryption keys to select member nodes. Furthermore, nowhere does Pandya teach or even suggest the desirability of controlling membership in the network, e.g., in order to provide secure communications channels between networked devices. Pandya thus fails to teach or make obvious a system for scalably managing VPNs that controls membership in discrete VPN subsets, as positively claimed by the Applicants in claim 1. Therefore, for at least the reasons set forth above, the Applicants submit that independent claim 1 fully satisfies the requirements of 35 U.S.C. §102 and is patentable thereunder.

Dependent claims 2-13 and 17 depend from claim 1 and recite additional features therefore. As such, and for at least the reasons set forth above, the Applicants submit that claims 2-13 and 17 are not anticipated by the teachings of Pandya. Therefore, the Applicants submit that dependent claims 2-13 and 17 also fully satisfy

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the requirements of 35 U.S.C. §102 and are patentable thereunder.

IV. REJECTION OF CLAIMS 14-16 UNDER 35 U.S.C. § 103

Claims 14-16 stand rejected as being unpatentable over Pandya. The Applicants respectfully traverse the rejection.

Pandya has been discussed above. As discussed, Pandya fails to disclose or suggest the novel invention of a virtual private network in which master nodes control membership for subsets of member nodes, as claimed in Applicants' independent claim 1, from which claims 14-16 depend. Moreover, nowhere does Pandya teach or even suggest the desirability of controlling or restricting membership in the network in which the agents and the control points are deployed, e.g., in order to provide secure communications channels between networked devices. Pandya thus fails to teach or make obvious a system for scalably managing VPNs that controls membership in discrete VPN subsets, as positively claimed by the Applicants in claim 1. Therefore, for at least the reasons set forth above, the Applicants submit that independent claim 1 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

Dependent claims 14-16 depend from claim 1 and recite additional features therefore. As such, and for at least the reasons set forth above, the Applicants submit that claims 14-16 are not made obvious by the teachings of Pandya. Therefore, the Applicants submit that dependent claims 14-16 also fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder.

Conclusion

Thus, the Applicants submit that all of the presented claims fully satisfy the requirements of 35 U.S.C. §102 and 35 U.S.C. §103. Consequently, the Applicants believe that all of the presented claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring the issuance of a final action in any of the claims now pending in the application, it is

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requested that the Examiner telephone Mr. Kin-Wah Tong, Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Date

9/1/04

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Respectfully submitted,



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